Complete Summary

GUIDELINE TITLE

Preoperative evaluation.

BIBLIOGRAPHIC SOURCE(S)

Institute for Clinical Systems Improvement (ICSI). Preoperative evaluation. Bloomington (MN): Institute for Clinical Systems Improvement (ICSI); 2008 Jul. 32 p. [20 references]

GUIDELINE STATUS

This is the current release of the guideline.

This guideline updates a previous version: Institute for Clinical Systems Improvement (ICSI). Preoperative evaluation. Bloomington (MN): Institute for Clinical Systems Improvement (ICSI); 2006 Jul. 33 p.

ICSI scientific documents are revised every 12 to 36 months as indicated by changes in clinical practice and literature.

COMPLETE SUMMARY CONTENT

SCOPE

DISEASE/CONDITION(S)

Conditions that require elective, low-risk operative procedures

GUIDELINE CATEGORY

Evaluation
Risk Assessment

CLINICAL SPECIALTY

Anesthesiology
Family Practice
Internal Medicine
Nursing
Pediatrics
Surgery

INTENDED USERS

Advanced Practice Nurses
Allied Health Personnel
Health Care Providers
Health Plans
Hospitals
Managed Care Organizations
Nurses
Physician Assistants
Physicians

GUIDELINE OBJECTIVE(S)

- To obtain appropriate preoperative history and physical examination, and to reduce diagnostic tests performed without clinical indications
- To increase the percentage of patients who receive appropriate management of stable comorbidities prior to surgery
- To eliminate canceled or delayed surgical procedures due to incomplete preoperative history and physical examination and communication

TARGET POPULATION

Adult and pediatric patients under evaluation for elective, low-risk operative procedures

Note: Pediatric patients for whom this guideline is intended are those between the ages of 2 and 15 years. Patients over age 15 are considered adults for the purposes of this guideline.

INTERVENTIONS AND PRACTICES CONSIDERED

Preoperative Assessment

1. Preoperative health assessment, including medical history and physical examination
2. Further evaluation as appropriate if preoperative assessment is abnormal (e.g., electrocardiogram, tests for hemoglobin and potassium, coagulation studies, chest x-ray)
3. Determining if patient is considered high risk
4. Management of stable comorbidities such as diabetes, sleep apnea, and conditions requiring use of beta-blockers, coronary artery stent placement, or antiplatelet therapy

5. Communicating results to site where procedure will be conducted and patient education about results of preoperative testing and fasting requirements
6. Immediate pre-procedure assessment

MAJOR OUTCOMES CONSIDERED

- Risk of cardiac or other operative complications
- Identification of electrocardiographic abnormalities
- Morbidity and mortality due to surgery

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

A literature search of clinical trials, meta-analysis, and systematic reviews is performed.

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Key conclusions (as determined by the work group) are supported by a conclusion grading worksheet that summarizes the important studies pertaining to the conclusion. Individual studies are classed according to the system presented below, and are designated as positive, negative, or neutral to reflect the study quality.

Conclusion Grades

Grade I: The evidence consists of results from studies of strong design for answering the question addressed. The results are both clinically important and consistent with minor exceptions at most. The results are free of any significant doubts about generalizability, bias, and flaws in research design. Studies with negative results have sufficiently large samples to have adequate statistical power.

Grade II: The evidence consists of results from studies of strong design for answering the question addressed, but there is some uncertainty attached to the conclusion because of inconsistencies among the results from the studies or

because of minor doubts about generalizability, bias, research design flaws, or adequacy of sample size. Alternatively, the evidence consists solely of results from weaker designs for the question addressed, but the results have been confirmed in separate studies and are consistent with minor exceptions at most.

Grade III: The evidence consists of results from studies of strong design for answering the question addressed, but there is substantial uncertainty attached to the conclusion because of inconsistencies among the results of different studies or because of serious doubts about generalizability, bias, research design flaws, or adequacy of sample size. Alternatively, the evidence consists solely of results from a limited number of studies of weak design for answering the question addressed.

Grade Not Assignable: There is no evidence available that directly supports or refutes the conclusion.

Study Quality Designations:

The quality of the primary research reports and systematic reviews are designated in the following ways on the conclusion grading worksheets:

Positive: indicates that the report or review has clearly addressed issues of inclusion/exclusion, bias, generalizability, and data collection and analysis.

Negative: indicates that these issues (inclusion/exclusion, bias, generalizability, and data collection and analysis) have not been adequately addressed.

Neutral: indicates that the report or review is neither exceptionally strong nor exceptionally weak.

Not Applicable: indicates that the report is not a primary reference or a systematic review and therefore the quality has not been assessed.

Classes of Research Reports:

A. Primary Reports of New Data Collection:

Class A:

- Randomized, controlled trial

Class B:

- Cohort study

Class C:

- Non-randomized trial with concurrent or historical controls
- Case-control study
- Study of sensitivity and specificity of a diagnostic test

- Population-based descriptive study

Class D:

- Cross-sectional study
- Case series
- Case report

B. Reports that Synthesize or Reflect upon Collections of Primary Reports:

Class M:

- Meta-analysis
- Systematic review
- Decision analysis
- Cost-effectiveness analysis

Class R:

- Consensus statement
- Consensus report
- Narrative review

Class X:

- Medical opinion

METHODS USED TO ANALYZE THE EVIDENCE

Systematic Review with Evidence Tables

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not stated

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

New Guideline Development Process

A new guideline, order set, and protocol is developed by a 6- to 12-member work group that includes physicians, nurses, pharmacists, other healthcare professionals relevant to the topic, along with an Institute for Clinical Systems Improvement (ICSI) staff facilitator. Ordinarily, one of the physicians will be the leader. Most work group members are recruited from ICSI member organizations, but if there is expertise not represented by ICSI members, 1 or 2 members may be recruited from medical groups or hospitals outside of ICSI.

The work group will meet for seven to eight three-hour meetings to develop the guideline. A literature search and review is performed and the work group members, under the coordination of the ICSI staff facilitator, develop the algorithm and write the annotations and footnotes and literature citations.

Once the final draft copy of the guideline is developed, the guideline goes to the ICSI members for critical review.

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Not applicable

COST ANALYSIS

The guideline developers reviewed published cost analyses.

METHOD OF GUIDELINE VALIDATION

Internal Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Critical Review Process

Every newly developed guideline or a guideline with significant change is sent to the Institute for Clinical Systems Improvement (ICSI) members for Critical Review. The purpose of critical review is to provide an opportunity for the clinicians in the member groups to review the science behind the recommendations and focus on the content of the guideline. Critical review also provides an opportunity for clinicians in each group to come to consensus on feedback they wish to give the work group and to consider changes necessary across systems in their organization to implement the guideline.

All member organizations are expected to respond to critical review guidelines. Critical review of guidelines is a criterion for continued membership within the ICSI.

After the critical review period, the guideline work group reconvenes to review the comments and make changes, as appropriate. The work group prepares a written response to all comments.

Approval

Each guideline, order set, and protocol is approved by the appropriate steering committee. There is one steering committee each for Respiratory, Cardiovascular, Women's Health, and Preventive Services. The Committee for Evidence-based Practice approves guidelines, order sets, and protocols not associated with a particular category. The steering committees review and approve each guideline based on the following:

- Member comments have been addressed reasonably.

- There is consensus among all ICSI member organizations on the content of the document.
- Within the knowledge of the reviewer, the scientific recommendations within the document are current.
- Either a critical review has been carried out, or to the extent of the knowledge of the reviewer, the changes proposed are sufficiently familiar and sufficiently agreed upon by the users that a new round of critical review is not needed.

Once the guideline, order set, or protocol has been approved, it is posted on the ICSI Web site and released to members for use. Guidelines, order sets, and protocols are reviewed regularly and revised, if warranted.

Revision Process of Existing Guidelines

ICSI scientific documents are revised every 12 to 36 months as indicated by changes in clinical practice and literature. Every 6 months, ICSI checks with the work group to determine if there have been changes in the literature significant enough to cause the document to be revised earlier than scheduled.

Prior to the work group convening to revise the document, ICSI members are asked to review the document and submit comments. During revision, a literature search of clinical trials, meta-analysis, and systematic reviews is performed and reviewed by the work group. The work group will meet for 1-2 three-hour meetings to review the literature, respond to member organization comments, and revise the document as appropriate.

If there are changes or additions to the document that would be unfamiliar or unacceptable to member organizations, it is sent to members to review prior to going to the appropriate steering committee for approval.

Review and Comment Process

ICSI members are asked to review and submit comments for every guideline, order set, and protocol prior to the work group convening to revise the document.

The purpose of the Review and Comment process is to provide an opportunity for the clinicians in the member groups to review the science behind the recommendations and focus on the content of the order set and protocol. Review and Comment also provides an opportunity for clinicians in each group to come to consensus on feedback they wish to give the work group and to consider changes needed across systems in their organization to implement the guideline.

All member organizations are encouraged to provide feedback on order sets and protocol, however responding to Review and Comment is not a criterion for continued membership within ICSI.

After the Review and Comment period, the work group reconvenes to review the comments and make changes as appropriate. The work group prepares a written response to all comments.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

Note from the National Guideline Clearinghouse (NGC) and the Institute for Clinical Systems Improvement (ICSI): For a description of what has changed since the previous version of this guidance, refer to Summary of Changes Report – July - 2008.

The recommendations for preoperative evaluation are presented in the form of an algorithm with 11 components, accompanied by detailed annotations. An algorithm is provided for Preoperative Evaluation. Clinical highlights and selected annotations (numbered to correspond with the algorithm) follow.

Class of evidence (A-D, M, R, X) and conclusion grade (I-III, Not Assignable) definitions are repeated at the end of the "Major Recommendations" field).

Priority Aims

1. Obtain appropriate preoperative history and physical examination, and reduce diagnostic tests performed without clinical indications (*Annotation #4*)
2. Increase the percentage of patients who receive appropriate management of stable comorbidities prior to surgery. (*Annotation #8*)
3. Eliminate canceled or delayed surgical procedures due to incomplete preoperative history and physical examination and communication. (*Annotation #4*)

Clinical Highlights

- Provide a comprehensive preoperative basic health assessment for all patients undergoing a diagnostic or therapeutic procedure as defined in the guideline. (*Annotation #4, Aim #1*)
- Most laboratory and diagnostic tests including electrocardiograms are not necessary with routine procedures unless a specific indication is present. (*Annotation #6, Aim #1*)
- Electrocardiograms are not indicated, regardless of age, for those patients having cataract surgery. (*Annotation #6, Aim #1*)
- Patients on chronic beta-blocker therapy should continue taking their beta-blocker medication up to and including the day of surgery. If beta-blocker therapy is stopped prior to surgery, patients are at increased risk for complications postoperatively. (*Annotation #8, Aim #2*)

Preoperative Evaluation Algorithm Annotations

1. **Decision to Perform Elective Procedure**

   The decision to perform an elective procedure is usually made at the time of the surgical or other consultation. There may be exceptions; for example, a nonsurgical procedure such as a computed tomography (CT)-guided lung biopsy might be arranged by the primary physician after discussion with a radiologist.

A member of the surgical team explains to the patient the procedure and the need for anesthesia and may obtain and document consent. (These issues must be addressed but are not part of this guideline.)

Patient education is essential to assist the patient in preparing for the surgical procedure and to reinforce compliance to preoperative instructions. The "Patient Preoperative Guide," an optional tool, may assist in these efforts. Please refer to Appendix A in the original guideline document (see "Availability of Companion Documents" field).

Patients undergoing high-risk or emergent procedures are beyond the scope of this guideline as a more extensive evaluation and risk assessment may be needed.

2. **High-Risk Procedure?**

Key Points:

- High-risk procedures include those where cardiovascular complications (for adults) and pulmonary complications (for children) inherently exist.
- Procedural risk stratification changes rapidly due to the introduction of different anesthesia types and the development of less-invasive surgical procedures.

High-risk referred to here is primarily surgical procedure-derived risk of *cardiac/pulmonary* complications. Cardiovascular complications are more common in adults, and pulmonary complications are more common in children. If a procedure presents other specific *noncardiovascular* associated high-risk, that risk and its stratification are beyond the scope of this guideline and need to be individually addressed by the surgeon. For example, a neurosurgical procedure may have an inherent elevated hemostasis risk.

The above scheme only distinguishes between high-risk procedures and non-high-risk procedures. Certainly further refinement is possible as illustrated in one reported study (high-, intermediate- and low-cardiac-risk categories) *[R]*. This guideline work group took the approach of universal precautions, meaning that, if all high-risk procedures are excluded and all patients are adequately evaluated preoperatively, there is questionable gain in further procedural risk stratification.

Although it is ultimately up to the involved providers to determine whether a particular procedure is considered to be high risk, it is generally accepted that most high-risk (greater than 5 percent combined incidence of cardiac death and nonfatal myocardial infarction) procedures fall into the following categories:

- Major cardiac and non-cardiac thoracic procedures
- Aortic and other major vascular procedures

- Anticipated prolonged surgical procedures (usually greater than two hours) associated with large fluid shifts and/or blood loss (e.g., pancreas resection [Whipple procedure], major spinal surgery).

4. **Preoperative Basic Health Assessment**

This guideline follows the basic premise that diagnostic tests (lab and x-ray) are not part of the preoperative basic health assessment.

A complete preoperative basic health assessment includes:

- **Medical History**

  Indication for surgical procedure

  Allergies and intolerances to medications, anesthesia, or other agents (specify reaction type)

  Known medical problems

  Surgical history

  Trauma (major)

  Current medications (prescription, over-the-counter medications, herbal and dietary supplements, and illicit drugs)

  Risk factors for development of surgical site infection

  Focused review of issues pertinent to the planned anesthesia and procedure:

  - Current status of pertinent known medical problems
  - Cardiac status
  - Pulmonary status
  - Functional status
  - Hemostasis status (personal or family history of abnormal bleeding)
  - Possibility of severe (symptomatic) anemia
  - Possibility of pregnancy
  - Past personal or family history of anesthesia problems
  - Smoking and alcohol history

- **Physical Exam**

  Weight and height

  Vital signs - blood pressure, pulse (rate and regularity), respiratory rate

  Cardiac

Pulmonary

Other pertinent exam *[R]*

A sample preoperative form is attached in Appendix B, "Preoperative Forms – Adult and Pediatric," in the original guideline document (see "Availability of Companion Documents" field).

Basic Health Assessment Applications

A preoperative basic health assessment as outlined in this guideline is required for all patients undergoing a diagnostic or therapeutic procedure, regardless of setting, except for:

- Otherwise healthy patients receiving peripheral nerve blocks, local or topical anesthesia, and/or no more than 50% nitrous oxide/oxygen and no other sedative or analgesic agents administered by any route (for example, most dental procedures or excision of simple skin lesions).
- Patients receiving "sedation/analgesia" (often referred to as "conscious sedation") defined as "a state that allows patients to tolerate unpleasant procedures while maintaining adequate cardiopulmonary function and the ability to respond purposefully to verbal command and/or tactile stimulation." This technique is commonly used for procedures such as endoscopy and bronchoscopy, and may be used for certain surgical procedures. Patient history must be available at the time they receive sedation/analgesia.

Although the preoperative basic health assessment is not specifically required for sedation/analgesia and other minor procedures, a limited preoperative assessment and documentation is required and mandated by the Joint Commission and other organizations *[R]*.

The preoperative basic health assessment is usually done within 30 days of the planned procedure. However, a review of the current history and focused physical examination will occur at the surgical facility prior to the procedure.

The patient needs to be aware that the preoperative assessment is not a substitute for preventive services, but the preoperative evaluation may be used as an opportunity to address preventive services.

This is another opportune time to initiate or augment patient education efforts including the use of the patient preoperative guide. Please see Appendix C, "Preoperative Questionnaire – Adult," and Appendix D, "Preoperative Questionnaire – Pediatric" in the original guideline document (see "Availability of Companion Documents" field).

5. **Abnormal Findings Pertinent to Preoperative Evaluation?**

Abnormal findings are results from the preoperative basic health assessment that suggest that further evaluation is needed in order to assess or optimize

surgical/anesthesia risk and care. Examples of abnormal findings are a patient taking medication such as a diuretic, suggesting the need for a recent potassium level, the presence of chest pains, or a markedly elevated blood pressure. Examples of abnormal findings in pediatric patients include a current upper respiratory infection or asthma.

There may be other abnormal findings that, although not relevant to the planned procedure, may be relevant to the patient's general health. The evaluation of these findings would follow standard medical practice and is beyond the scope of the guideline. This type of finding would not necessarily need to delay the procedure.

Preoperative questionnaires to assist in determining abnormal findings for adult and pediatric patients are attached in Appendix C, "Preoperative Questionnaire—Adults" and Appendix D, "Preoperative Questionnaire—Pediatrics" in the original guideline document.

6. **Further Evaluation Performed and Evaluated for Surgical/Anesthesia Risk**

Key Points:

- Most laboratory and diagnostic tests including electrocardiograms are not necessary for routine procedures unless a specific indication is present. The role of a preoperative electrocardiogram is uncertain. On rare occasions, an electrocardiogram can detect a previously unrecognized myocardial infarction.
- Electrocardiograms are not indicated, regardless of age, for those patients having cataract surgery.

Further evaluation may be as simple as asking a few more questions, performing further physical examination, or ordering a laboratory or radiological exam. More in-depth evaluations may be needed such as a consultation or treadmill testing.

The type and extent of evaluation required should be guided by standard medical practice with consideration of the patient's underlying medical condition and the planned procedure. For example, some practitioners will order a baseline preoperative hemoglobin if significant blood loss is anticipated. Recommendations for this type of testing are beyond the scope of the guideline.

Abnormal findings might trigger a need for a specific laboratory test. Note that most laboratory tests (e.g., hemoglobin, potassium, coagulation studies, chest x-rays, electrocardiograms) are not routinely necessary unless a specific indication is present.

Test	Consider Performing if:
Electrocardiogram	• No electrocardiogram within last year in patients (regardless of age) with history of

Test	Consider Performing if:
	diabetes, hypertension, chest pain, congestive heart failure, smoking, peripheral vascular disease, inability to exercise, or morbid obesity. • At time of preoperative evaluation, patient has any intercurrent cardiovascular symptoms or signs and symptoms of new or unstable cardiac disease.
Coagulation studies	• Patient has a known history of coagulation abnormalities or recent history suggesting coagulation problems or is on anticoagulants. • Patient needs anticoagulation post-operatively (where a baseline may be needed).
Hemoglobin	• Patient has a history of anemia or history suggesting recent blood loss or anemia.
Potassium	• Patient is taking digoxin, diuretics, angiotensin-converting enzyme (ACE) inhibitors or angiotensin receptor blockers.
Chest x-ray	• Patient has signs or symptoms suggesting new or unstable cardiopulmonary disease.

Refer to the original guideline document for more information on electrocardiogram, coagulation studies, and hemoglobin.

7. **High Risk Patient?**

High-risk in this context refers particularly to the risk of *cardiac* complications in adults and *airway* complications in pediatric patients. However, *noncardiac* conditions in adults and *cardiac* conditions in pediatric patients, along with other conditions such as coagulopathy, severe symptomatic anemia, pregnancy, and anesthesia reactions can be significant problems in selected patients. These conditions also need to be screened for as indicated in the preoperative basic health assessment. The specifics of risk stratification for noncardiac conditions relative to an individual patient are beyond the scope of this guideline.

The final determination of a patient as high risk occurs after review and analysis of the preoperative basic health assessment and any other adjunctive evaluation that was indicated for surgical/anesthesia risk. The determination is the responsibility of involved providers, including the primary care physician, surgeon, and/or anesthesiologist.

Although it is ultimately the responsibility of involved providers to determine whether a particular patient is considered to be at high risk of complication, it is generally accepted that patients at high risk usually fall into the following categories:

Cardiovascular

- Unstable coronary syndromes
    - Recent* myocardial infarction
    - Unstable or severe angina

      *Recent can mean less than 30 days if post myocardial infarction cardiac risk stratification is completed and patient determined to be low-risk; 3 to 6 months if formal risk stratification not done.

- Decompensated congestive heart failure
- Significant arrhythmias
    - High grade atrioventricular block
    - Symptomatic ventricular arrhythmias in the presence of underlying heart disease
    - Supraventricular arrhythmias with uncontrolled ventricular rate
- Severe valvular disease
- Severe hypertension (diastolic over 110, systolic over 180)
- Congenital heart abnormalities

Non-Cardiovascular

- Pulmonary disease, severe or symptomatic (e.g., chronic obstructive pulmonary disease requiring oxygen, respiratory distress at rest, asthma, cystic fibrosis)
- Poorly controlled symptomatic diabetes (causing symptoms with attendant risk of hypovolemia)
- Symptomatic anemia

8. **Management of Stable Comorbidities**

Antithrombotic Therapy

General recommendations regarding antithrombotic therapy are beyond the scope of this document, given the different classes of medications and the variety of situations for which they are used. (This document does however make recommendations regarding coronary stents and antiplatelet therapy; see below). For patients on antithrombotic therapy, please refer to the NGC summary of the ICSI guideline Antithrombotic Therapy Supplement for information regarding management.

Beta-Blockers

Patients on chronic beta-blocker therapy should continue their medication up to and including the day of surgery. If beta-blocker therapy is stopped prior to

surgery, patients may be at increased risk for complications postoperatively *[R]*.

Coronary Artery Stent Placement (Recent) and Antiplatelet Therapy (Aspirin, Clopidogrel and Ticlopidine)

There is clear evidence that premature discontinuation of dual platelet therapy (aspirin combined with clopidogrel (Plavix®) or ticlopidine (Ticlid®) for any reason after coronary stent placement results in a marked increased risk of myocardial infarction or death *[R]*. Therefore, a critical part of the preoperative evaluation of a patient who fits this description is a careful assessment of the benefits of the surgery itself and surgical bleeding risk versus the high risk of cardiac events if platelet therapy is reduced or stopped prematurely. Important stent considerations include: how long the coronary stent has been in place and whether the stent is a bare-metal stent versus a drug-eluting stent.

The presurgical evaluation of risk in this group of patients may require discussion with cardiology and surgery.

General principles are as follows:

- For patients with bare-metal stents, surgery should be avoided for the first four to six weeks after stenting.
- For patients with drug-eluting stents, surgery should be avoided for one year after stenting.
- If surgery cannot be avoided during the above time periods, dual platelet therapy should be continued perioperatively unless strongly contraindicated. Alternatives such as stopping the clopidogrel/ticlopidine and continuing aspirin or stopping all antiplatelet therapy may be necessary to reduce bleeding risk but are associated with increased cardiac risk.
- If antiplatelet therapy is held prior to surgery, it should be restarted as soon as possible following surgery *[R]*.

Diabetic Management

Given the complexities and wide variety of methodologies employed to achieve glycemic control, individual patient evaluation and instruction are required prior to surgery.

General principles are as follows:

- No oral hypoglycemics on the day of surgery
- Usually 1/3 to 1/2 of patient's routine morning insulin dosage may be administered

Sleep Apnea

Obstructive sleep apnea increases the patient's risk for intra- and postoperative complications *[C]*. Patients with a diagnosis of obstructive sleep

apnea often have oral appliances or continuous positive airway pressure equipment and should be reminded to bring those appliances or equipment on the operative day, for use during the recovery from anesthesia or sedation.

Some patients may not bear a diagnosis of obstructive sleep apnea confirmed by polysomnography studies, but are presumed to have obstructive sleep apnea based on the preoperative history and physical examination. This information should be communicated to the surgeon and anesthesiologist before the patient undergoes any procedure involving general anesthesia, monitored anesthesia care, conscious sedation or the administration of narcotics. Refer to the NGC summary of the ICSI guideline Diagnosis and Treatment of Obstructive Sleep Apnea in Adults.

Smoking Cessation

Smoking cessation is an important intervention for the overall health of patients, and surgery may provide the impetus for patients to quit. Patients who quit smoking prior to surgery do not risk postoperative complications related to smoking cessation *[D]*. With the exception of improved wound healing for head and neck surgeries *[D]*, there is no strong evidence to recommend smoking cessation prior to surgery as a means to achieve improved outcomes and reduce postoperative complications.

9. **Communicate Results and Instructions to Facility and Patient**

The results must be communicated to the location where the procedure will be conducted prior to the date of the scheduled procedure. The report should include a complete summary of the assessment, any adjunctive evaluation, and any specific recommendations.

Preoperative forms for relaying preoperative assessment information for adult and pediatric patients are attached in Appendix B, "Preoperative Forms – Adult and Pediatric" in the original guideline document (see "Availability of Companion Documents" field).

Patient Education

Preoperative patient education is a shared responsibility of providers. This education should include both general and procedure specific information, including the results of any preoperative testing, along with specific recommendations or instructions prior to surgery.

Preoperative Fasting Recommendations (Nothing by Mouth [NPO])

Preoperative fasting guidelines have been revised and simplified over the last decade. The American Society of Anesthesiologists Task Force on Preoperative Fasting has issued practice guidelines that follow a "2, 4, 6 hour" rule applying to all ages:

- The fasting period for clear liquids, including water, fruit juices without pulp, carbonated beverages, clear tea and coffee is recommended to be two hours or longer prior to surgery.
- The fasting period for breast milk is recommended to be four hours or longer prior to surgery.
- The fasting period for formula, non-human milk and light meals such as toast and clear liquids is recommended to be six hours or longer prior to surgery.
- The fasting period for fried and fatty foods or meat may be longer, as these foods may prolong gastric emptying time. The amount and type of food should be taken into account to determine an appropriate fasting period.

Patients should be educated and informed of fasting requirements sufficiently in advance of the procedure *[R]*.

10. **Immediate Pre-Procedure Assessment**

    The immediate pre-procedure assessment is completed when the patient arrives for the procedure. The purpose is to assure that all necessary information is available and that the patient's medical condition is stable (i.e., he/she continues to be a low-risk patient). The nature of this review is beyond the scope of the guideline but is defined by the Joint Commission and other regulatory agencies.

Definitions:

Conclusion Grades

Grade I: The evidence consists of results from studies of strong design for answering the question addressed. The results are both clinically important and consistent with minor exceptions at most. The results are free of any significant doubts about generalizability, bias, and flaws in research design. Studies with negative results have sufficiently large samples to have adequate statistical power.

Grade II: The evidence consists of results from studies of strong design for answering the question addressed, but there is some uncertainty attached to the conclusion because of inconsistencies among the results from the studies or because of minor doubts about generalizability, bias, research design flaws, or adequacy of sample size. Alternatively, the evidence consists solely of results from weaker designs for the question addressed, but the results have been confirmed in separate studies and are consistent with minor exceptions at most.

Grade III: The evidence consists of results from studies of strong design for answering the question addressed, but there is substantial uncertainty attached to the conclusion because of inconsistencies among the results of different studies or because of serious doubts about generalizability, bias, design flaws, or adequacy of sample size. Alternatively, the evidence consists solely of results from a limited number of studies of weak design for answering the question addressed.

Grade Not Assignable: There is no evidence available that directly supports or refutes the conclusion.

Classes of Research Reports:

A. Primary Reports of New Data Collection:

Class A:

- Randomized, controlled trial

Class B:

- Cohort study

Class C:

- Non-randomized trial with concurrent or historical controls
- Case-control study
- Study of sensitivity and specificity of a diagnostic test
- Population-based descriptive study

Class D:

- Cross-sectional study
- Case series
- Case report

B. Reports that Synthesize or Reflect upon Collections of Primary Reports:

Class M:

- Meta-analysis
- Systematic review
- Decision analysis
- Cost-effectiveness analysis

Class R:

- Consensus statement
- Consensus report
- Narrative review

Class X:

- Medical opinion

CLINICAL ALGORITHM(S)

A detailed and annotated clinical algorithm is provided for Preoperative Evaluation.

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of supporting evidence is classified for selected recommendations (see "Major Recommendations").

In addition, key conclusions contained in the Work Group's algorithm are supported by a grading worksheet that summarizes the important studies pertaining to the conclusion. The type and quality of the evidence supporting these key recommendations (i.e., choice among alternative therapeutic approaches) is graded for each study.

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

- Decreased morbidity and mortality due to surgery
- Elimination of canceled or delayed surgical procedures
- Appropriate preoperative history taking and reduction of diagnostic tests performed without clinical indications
- Appropriate management of stable comorbidities prior to surgery

POTENTIAL HARMS

Not stated

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

- This clinical guideline is designed to assist clinicians by providing an analytical framework for the evaluation and treatment of patients, and is not intended either to replace a clinician's judgment or to establish a protocol for all patients with a particular condition. A guideline will rarely establish the only approach to a problem.
- This clinical guideline should not be construed as medical advice or medical opinion related to any specific facts or circumstances. Patients are urged to consult a health care professional regarding their own situation and any specific medical questions they may have.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

Once a guideline is approved for general implementation, a medical group can choose to concentrate on the implementation of that guideline. When four or more groups choose the same guideline to implement and they wish to collaborate with others, they may form an action group.

In the action group, each medical group sets specific goals they plan to achieve in improving patient care based on the particular guideline(s). Each medical group shares its experiences and supporting measurement results within the action group. This sharing facilitates a collaborative learning environment. Action group learnings are also documented and shared with interested medical groups within the collaborative.

Currently, action groups may focus on one guideline or a set of guidelines such as hypertension, lipid treatment, and tobacco cessation.

Detailed measurement strategies are presented in the original guideline document to help close the gap between clinical practice and the guideline recommendations. Summaries of the measures are provided in the National Quality Measures Clearinghouse (NQMC).

Key Implementation Recommendations

The following system changes were identified by the guideline work group as key strategies for health care systems to incorporate in support of the implementation of this guideline.

1. Establish a system to provide the timely communication of the results of the assessment to the procedure location.
2. Promote patient awareness of the planned procedure and preoperative process prior to the date of the procedure.

IMPLEMENTATION TOOLS

Chart Documentation/Checklists/Forms
Clinical Algorithm
Pocket Guide/Reference Cards
Quality Measures

For information about availability, see the "Availability of Companion Documents" and "Patient Resources" fields below.

RELATED NQMC MEASURES

- Preoperative evaluation: percentage of patients with a preoperative health history and physical examination completed prior to the day of scheduled procedure.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Getting Better

IOM DOMAIN

Effectiveness
Patient-centeredness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

Institute for Clinical Systems Improvement (ICSI). Preoperative evaluation. Bloomington (MN): Institute for Clinical Systems Improvement (ICSI); 2008 Jul. 32 p. [20 references]

ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

1997 Sep (revised 2008 Jul)

GUIDELINE DEVELOPER(S)

Institute for Clinical Systems Improvement - Private Nonprofit Organization

GUIDELINE DEVELOPER COMMENT

Organizations participating in the Institute for Clinical Systems Improvement (ICSI): Affiliated Community Medical Centers, Allina Medical Clinic, Altru Health System, Aspen Medical Group, Avera Health, CentraCare, Columbia Park Medical Group, Community-University Health Care Center, Dakota Clinic, ENT Specialty Care, Fairview Health Services, Family HealthServices Minnesota, Family Practice Medical Center, Gateway Family Health Clinic, Gillette Children's Specialty Healthcare, Grand Itasca Clinic and Hospital, HealthEast Care System, HealthPartners Central Minnesota Clinics, HealthPartners Medical Group and Clinics, Hutchinson Area Health Care, Hutchinson Medical Center, Lakeview Clinic, Mayo Clinic, Mercy Hospital and Health Care Center, MeritCare, Mille Lacs Health System, Minnesota Gastroenterology, Montevideo Clinic, North Clinic, North Memorial Care System, North Suburban Family Physicians, Northwest Family Physicians, Olmsted Medical Center, Park Nicollet Health Services, Pilot City Health Center, Quello Clinic, Ridgeview Medical Center, River Falls Medical Clinic, Saint Mary's/Duluth Clinic Health System, St. Paul Heart Clinic, Sioux Valley Hospitals and Health System, Southside Community Health Services, Stillwater Medical Group, SuperiorHealth Medical Group, University of Minnesota Physicians, Winona Clinic, Ltd., Winona Health

ICSI, 8009 34th Avenue South, Suite 1200, Bloomington, MN 55425; telephone, (952) 814-7060; fax, (952) 858-9675; e-mail: icsi.info@icsi.org; Web site: www.icsi.org.

SOURCE(S) OF FUNDING

The following Minnesota health plans provide direct financial support: Blue Cross and Blue Shield of Minnesota, HealthPartners, Medica, Metropolitan Health Plan, PreferredOne, and UCare Minnesota. In-kind support is provided by the Institute for Clinical Systems Improvement's (ICSI) members.

GUIDELINE COMMITTEE

Committee on Evidence-Based Practice

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Work Group Members: David Danielson, MD (Work Group Leader) (Mayo Clinic) (Anesthesiology); John Robrock, MD (Park Nicollet Health System) (Family Medicine); Peter Rothe, MD (HealthPartners Medical Group) (Internal Medicine); Jerry Stultz, MD (HealthPartners Medical Group) (Pediatrics); Kevin Bjork, MD (Stillwater Medical Center) (Surgery); Teresa Hunteman, MA, CPHQ (Institute for Clinical Systems Improvement) (Measurement/Implementation Advisor); Joann Foreman, RN (Institute for Clinical Systems Improvement) (Facilitator); Melissa Marshall, MBA (Institute for Clinical Systems Improvement) (Facilitator)

FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

The Institute for Clinical Systems Improvement (ICSI) has adopted a policy of transparency, disclosing potential conflict and competing interests of all individuals who participate in the development, revision and approval of ICSI documents (guidelines, order sets and protocols). This applies to all work groups (guidelines, order sets and protocols) and committees (Committee on Evidence-Based Practice, Cardiovascular Steering Committee, Women's Health Steering Committee, Preventive & Health Maintenance Steering Committee and Respiratory Steering Committee).

Participants must disclose any potential conflict and competing interests they or their dependents (spouse, dependent children, or others claimed as dependents) may have with any organization with commercial, proprietary, or political interests relevant to the topics covered by ICSI documents. Such disclosures will be shared with all individuals who prepare, review and approve ICSI documents.

No work group members have potential conflicts of interest to disclose.

ICSI's conflict of interest policy and procedures are available for review on ICSI's website at www.icsi.org.

GUIDELINE STATUS

This is the current release of the guideline.

This guideline updates a previous version: Institute for Clinical Systems Improvement (ICSI). Preoperative evaluation. Bloomington (MN): Institute for Clinical Systems Improvement (ICSI); 2006 Jul. 33 p.

ICSI scientific documents are revised every 12 to 36 months as indicated by changes in clinical practice and literature.

GUIDELINE AVAILABILITY

Electronic copies: Available from the Institute for Clinical Systems Improvement (ICSI) Web site.

Print copies: Available from ICSI, 8009 34th Avenue South, Suite 1200, Bloomington, MN 55425; telephone, (952) 814-7060; fax, (952) 858-9675; Web site: www.icsi.org; e-mail: icsi.info@icsi.org.

AVAILABILITY OF COMPANION DOCUMENTS

The following are available:

- Preoperative evaluation. Executive summary. Bloomington (MN): Institute for Clinical Systems Improvement, 2008 Jul. 1 p. Electronic copies: Available from the Institute for Clinical Systems Improvement (ICSI) Web site.
- ICSI pocket guidelines. May 2007 edition. Bloomington (MN): Institute for Clinical Systems Improvement, 2007.

Print copies: Available from ICSI, 8009 34th Avenue South, Suite 1200, Bloomington, MN 55425; telephone, (952) 814-7060; fax, (952) 858-9675; Web site: www.icsi.org; e-mail: icsi.info@icsi.org.

Additionally, Appendices A-D in the original guideline document include patient preoperative guides and questionnaires for adult and pediatric populations.

PATIENT RESOURCES

None available

NGC STATUS

This summary was updated on December 4, 2002. The updated information was verified by the guideline developer on December 24, 2002. This summary was updated by ECRI on May 3, 2004, and September 18, 2006. This summary was updated by ECRI Institute on October 28, 2008.

COPYRIGHT STATEMENT

If the abstracted ICSI Guidelines are downloaded by an organization, copies may be distributed to the organization's employees but may not be distributed outside of the organization without the prior written consent of the Institute for Clinical Systems Improvement, Inc.

All other copyright rights in the abstracted ICSI Guidelines are reserved by the Institute for Clinical Systems Improvement, Inc. The Institute for Clinical Systems Improvement, Inc. assumes no liability for any adaptations or revisions or modifications made to the abstracts of the ICSI Guidelines.

DISCLAIMER

NGC DISCLAIMER

The National Guideline Clearinghouse™ (NGC) does not develop, produce, approve, or endorse the guidelines represented on this site.

All guidelines summarized by NGC and hosted on our site are produced under the auspices of medical specialty societies, relevant professional associations, public or private organizations, other government agencies, health care organizations or plans, and similar entities.

Guidelines represented on the NGC Web site are submitted by guideline developers, and are screened solely to determine that they meet the NGC Inclusion Criteria which may be found at http://www.guideline.gov/about/inclusion.aspx .

NGC, AHRQ, and its contractor ECRI Institute make no warranties concerning the content or clinical efficacy or effectiveness of the clinical practice guidelines and related materials represented on this site. Moreover, the views and opinions of developers or authors of guidelines represented on this site do not necessarily state or reflect those of NGC, AHRQ, or its contractor ECRI Institute, and inclusion or hosting of guidelines in NGC may not be used for advertising or commercial endorsement purposes.

Readers with questions regarding guideline content are directed to contact the guideline developer.

Date Modified: 11/17/2008